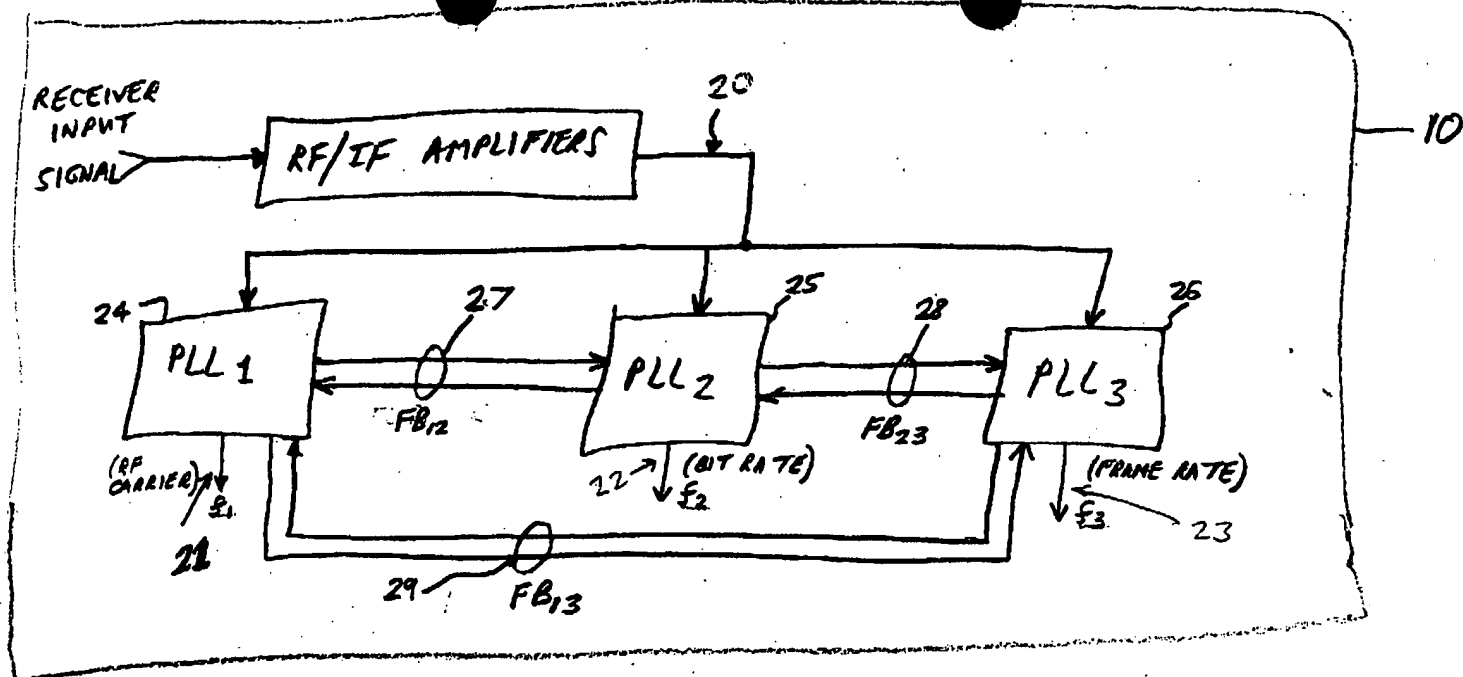


f_1 = RF/IF carrier
 f_2 = Bit rate
 f_3 = Frame rate

Fig. 1 (Prior Art)

09653788.090100

Fig. 2

001060" 887E5960

0563788-0601

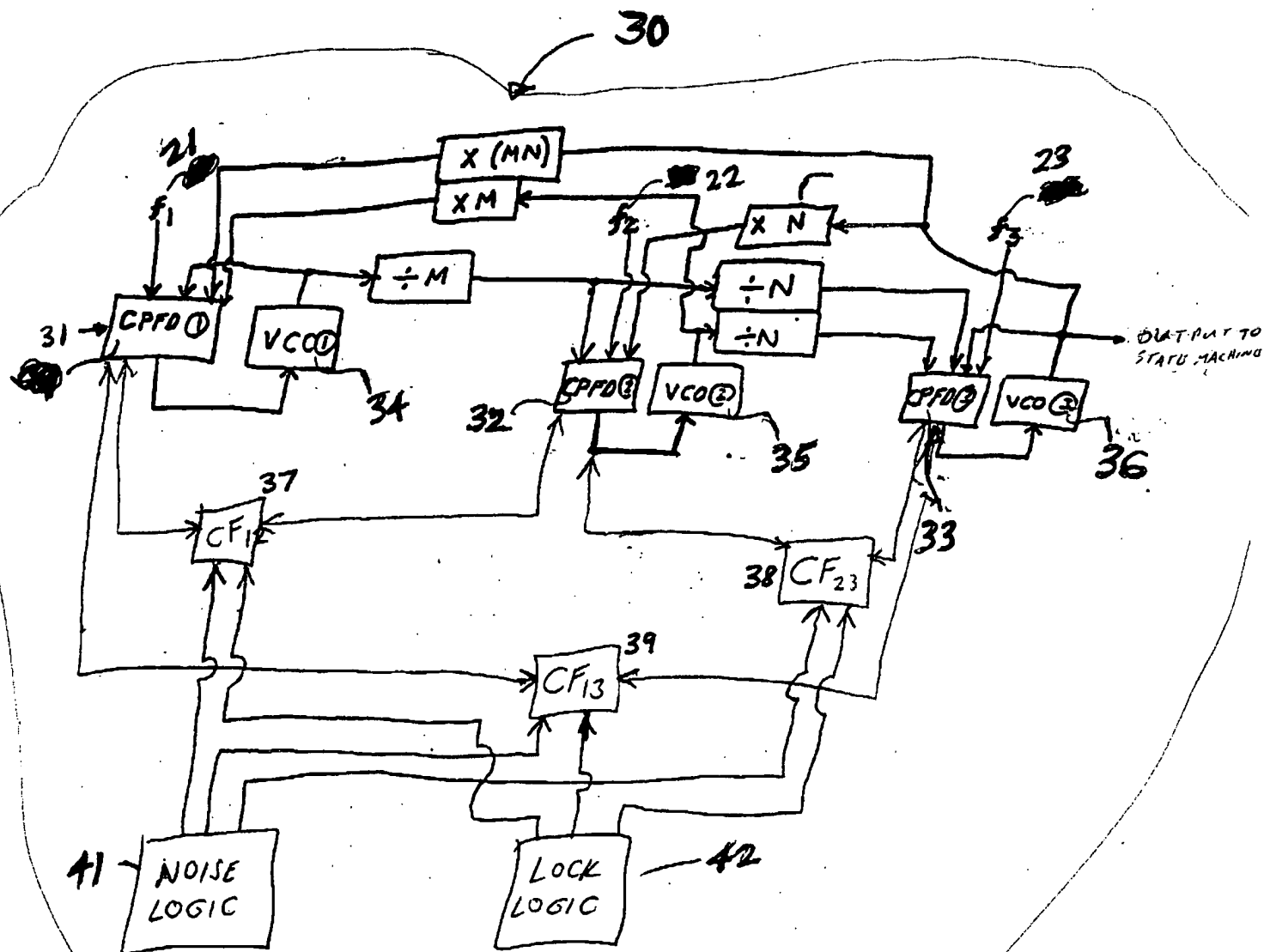
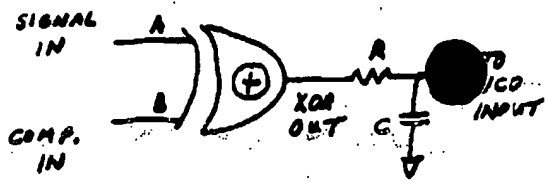
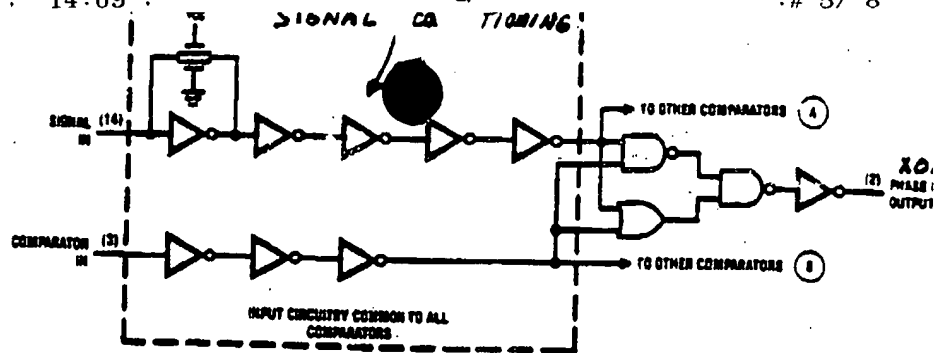


Fig. 3

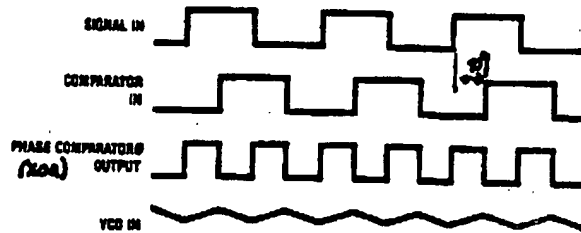


(A) Basic XOR Phase Comparator.

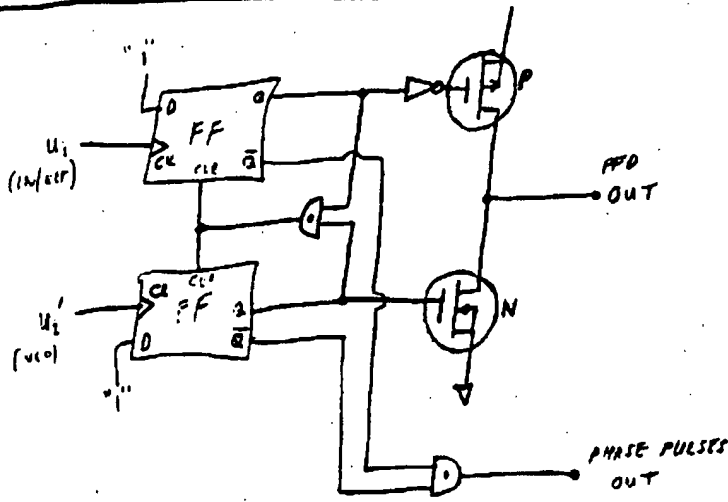
A	B	XOR
0	0	0
0	1	1
1	0	1
1	1	0



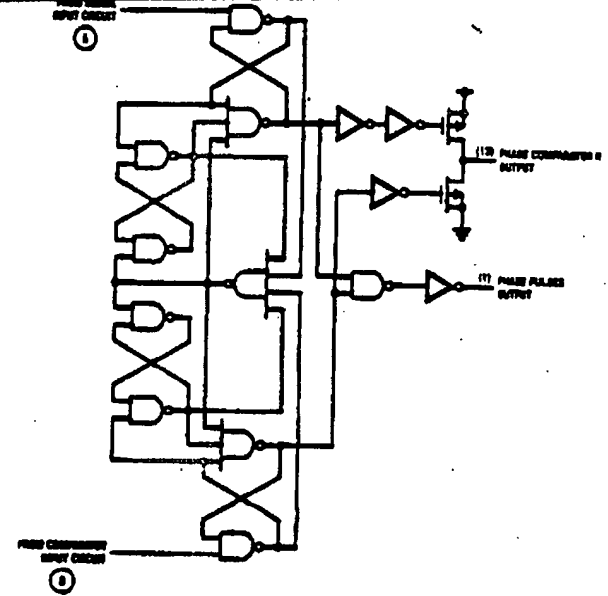
(B) Detailed on-chip IC circuitry in 74HC404



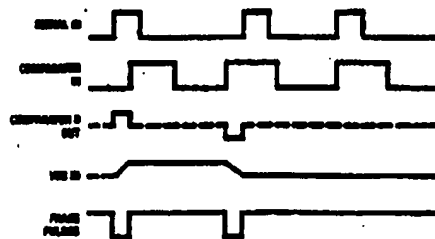
(C) Typical XOR Detector Waveforms.



High-Level Diagram of PFD (existing art).



Gate-Level Diagram of PFD (existing art)



Timing and Waveforms of PFD (existing art).

Fig. 4 (Prior Art)

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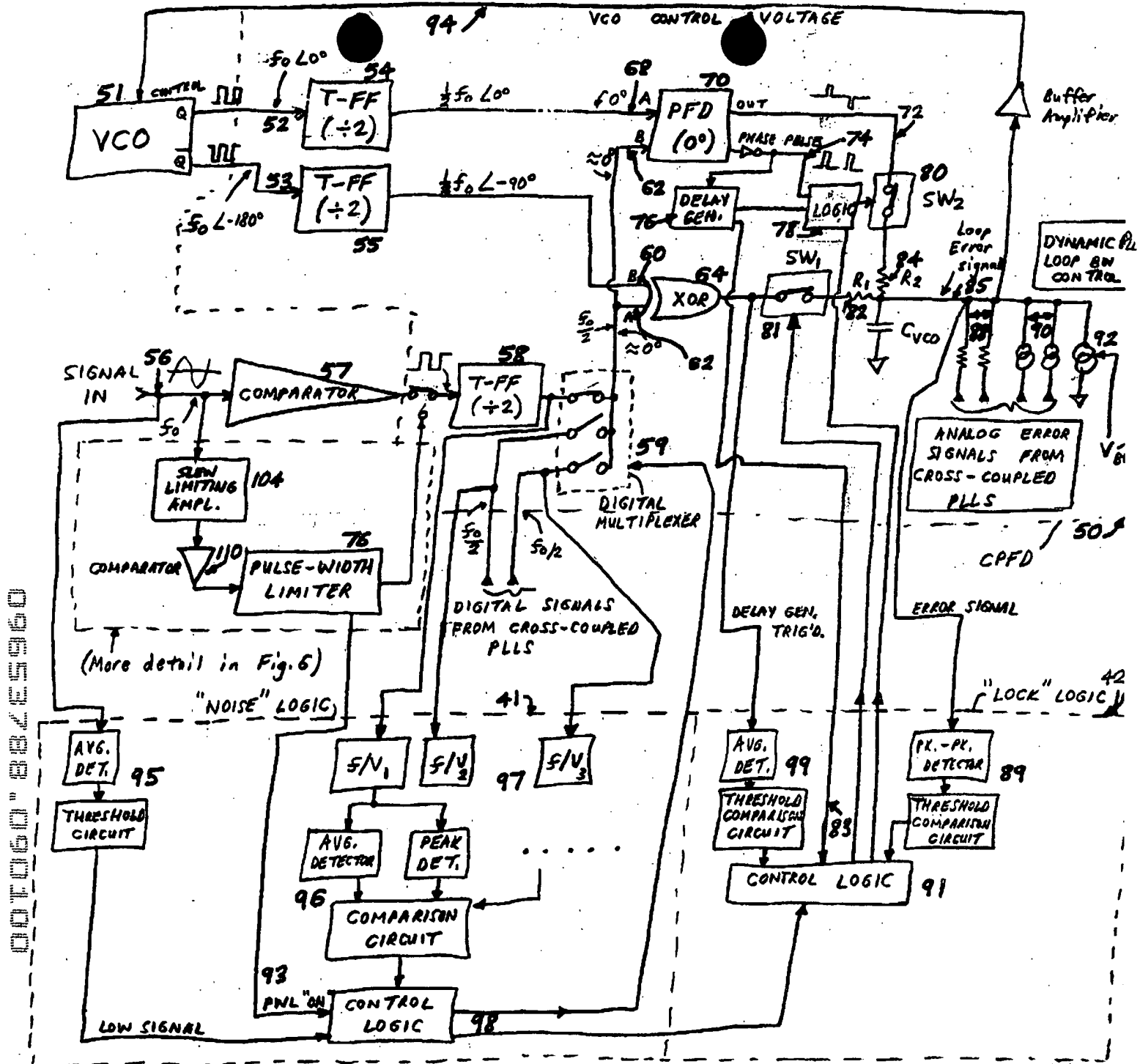
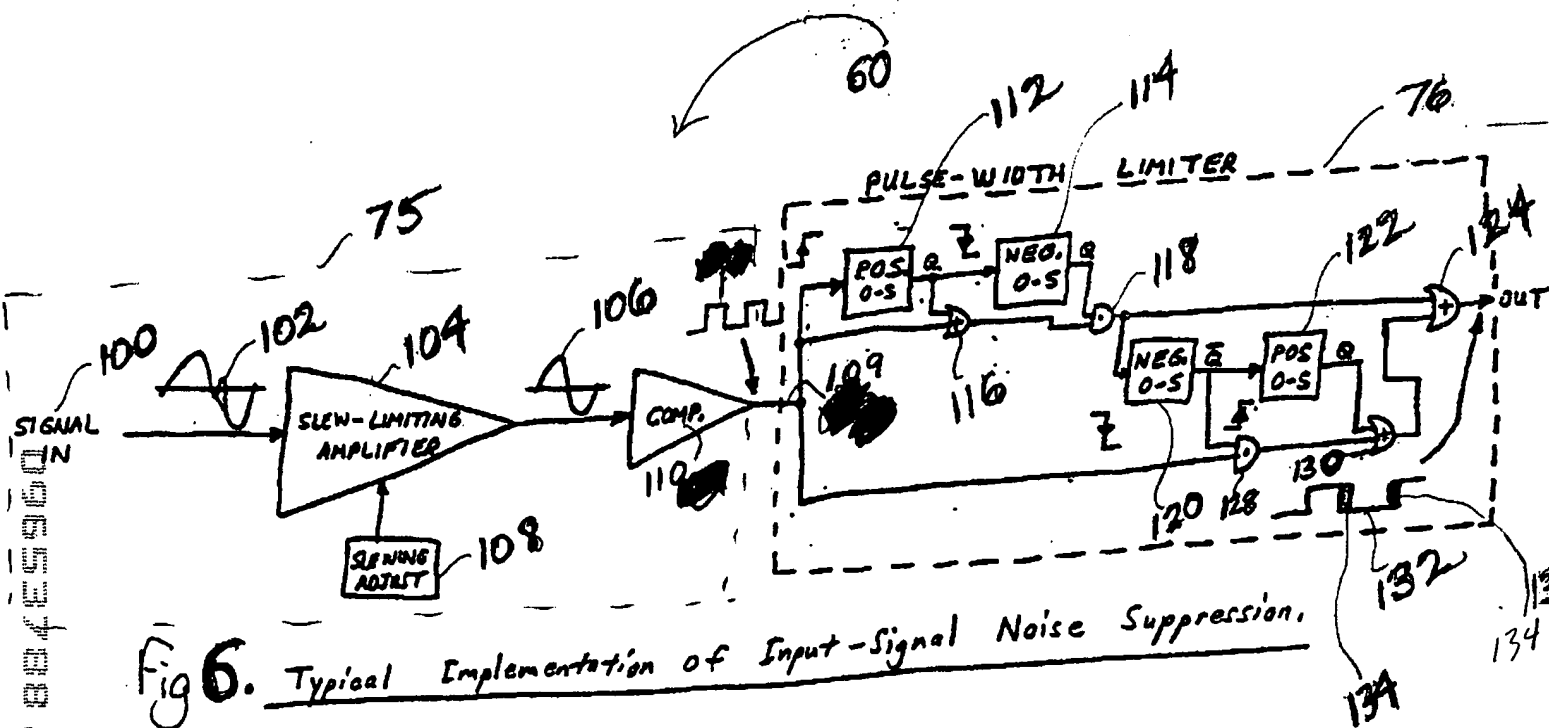
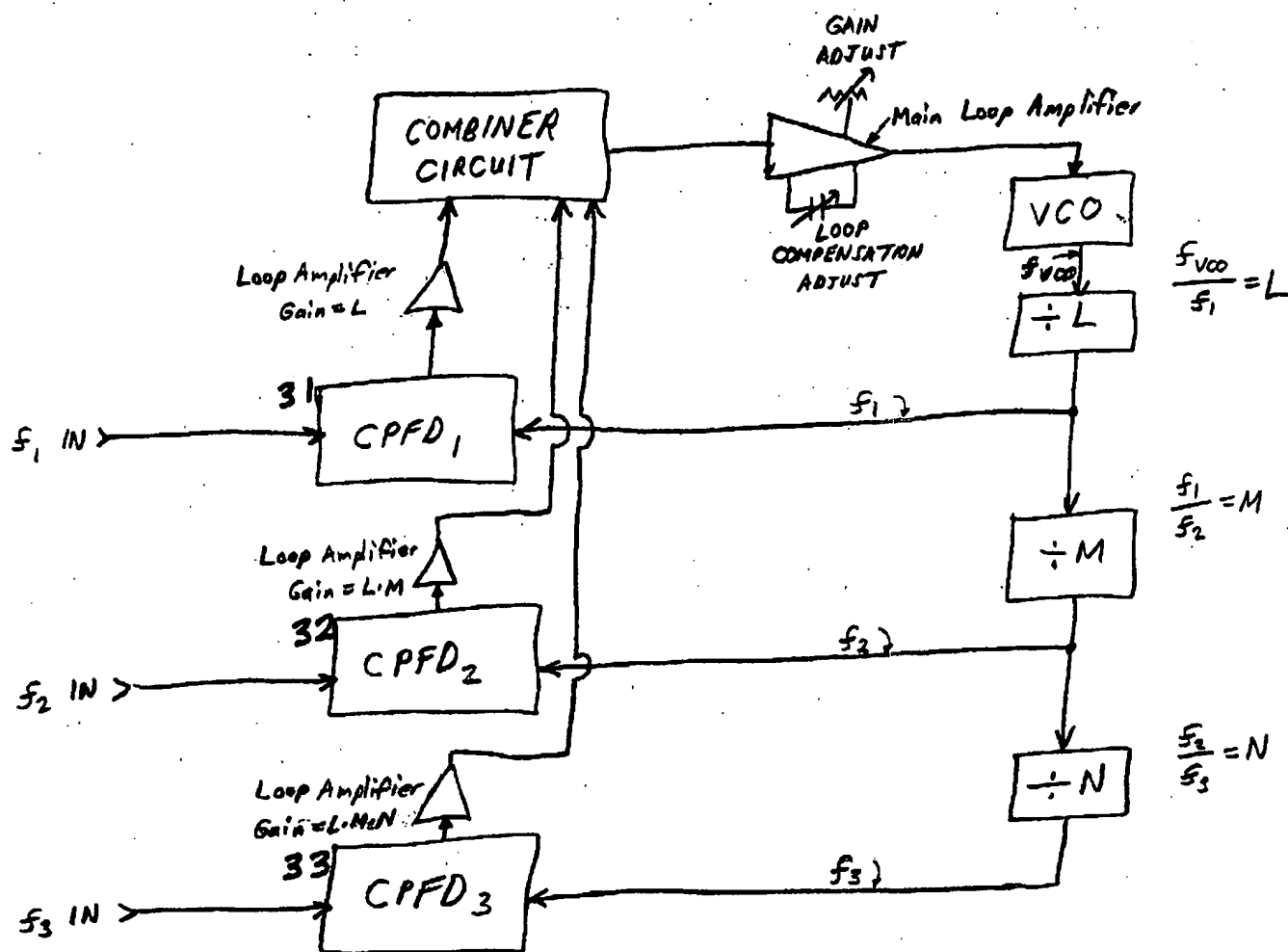


Fig. 5



Fig. 7Single - VCO System Implementation